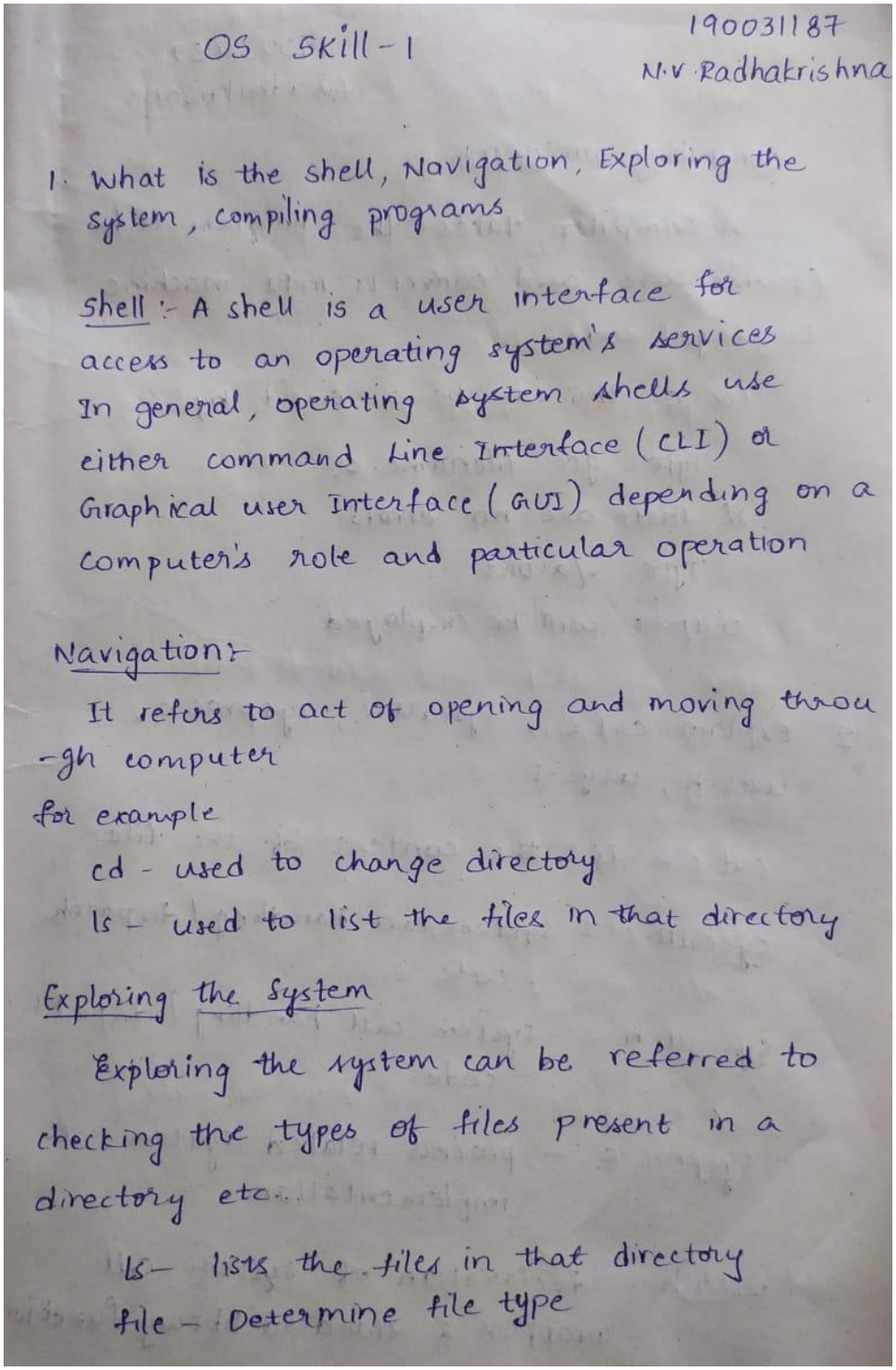
Operating System Design – 19CS2106S

Skill Experiment – 1

1) What Is the Shell, Navigation, Exploring the System, Compiling Programs.



OS SKill-1 190031187
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1. What is the shell, Navigation, Exploring the system, compiling programs

Shell :- A shell is a user interface for access to an operating system's services In general, operating system shells use either command Line Interface (CLI) or Graphical user Interface (GUI) depending on a computer's role and particular operation

Navigation:-

It refers to act of opening and moving throu -gh computer

for example

cd - used to change directory

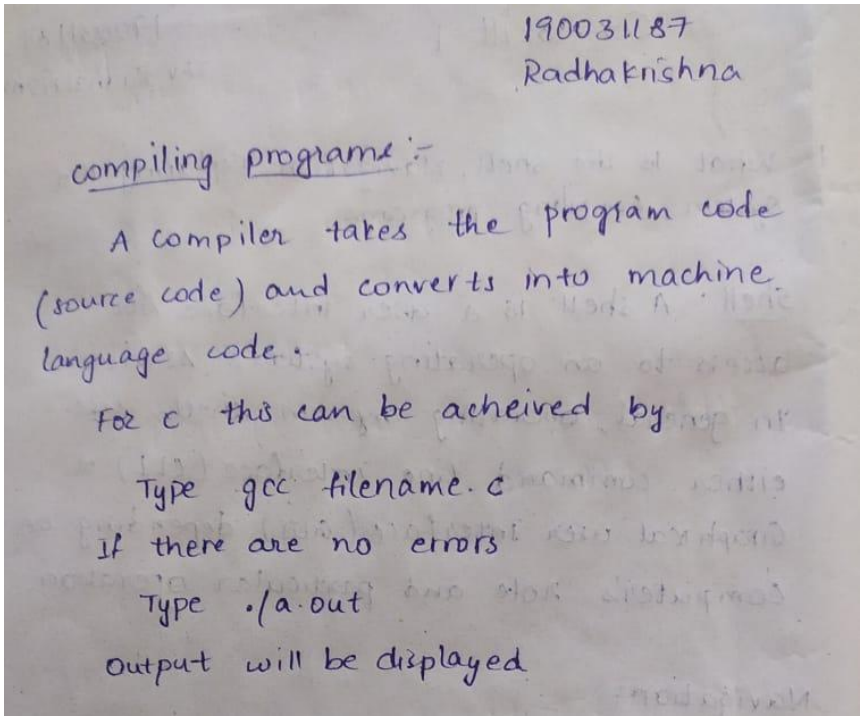
ls - used to list the files in that directory

Exploring the System

Exploring the system can be referred to checking the types of files present in a directory etc..

ls - lists the files in that directory

file - Determine file type



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compiling programs :-

A compiler takes the program code (source code) and converts into machine language code.

For c this can be acheived by

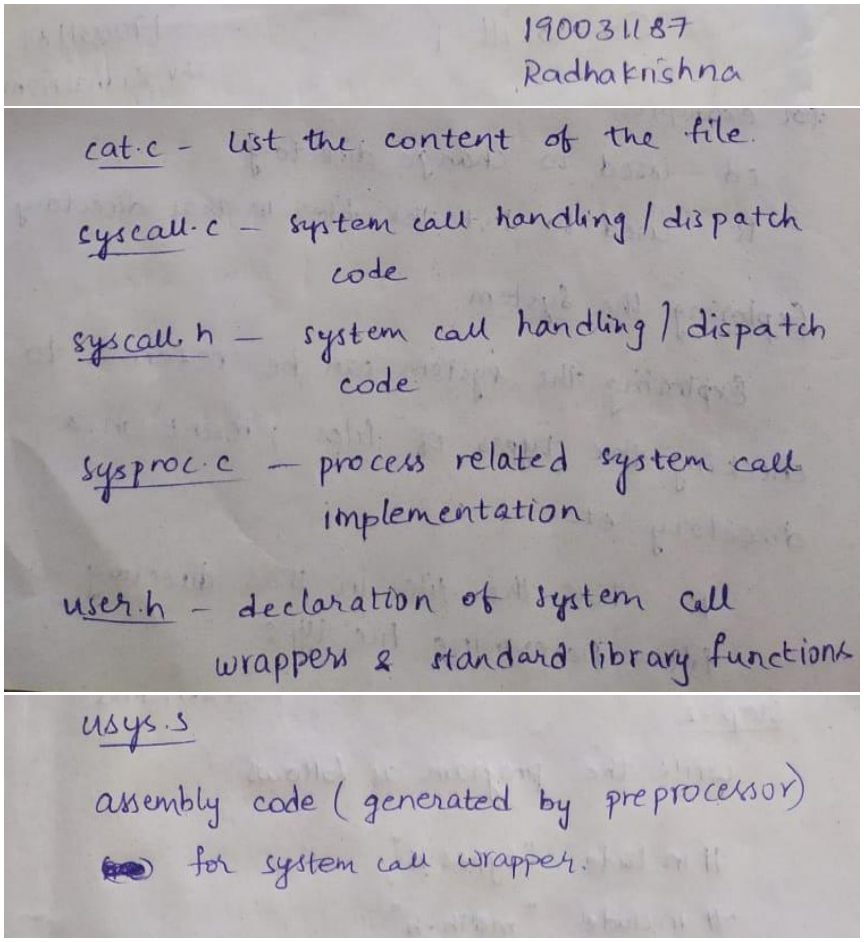
Type gcc filename.c

If there are no errors

Type ./a.out

Output will be displayed

2) cat.c syscall.c syscall.h sysproc.c user.h usys.S



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cat.c - List the content of the file.

syscall.c - system call handling / dispatch code

syscall.h - system call handling / dispatch code

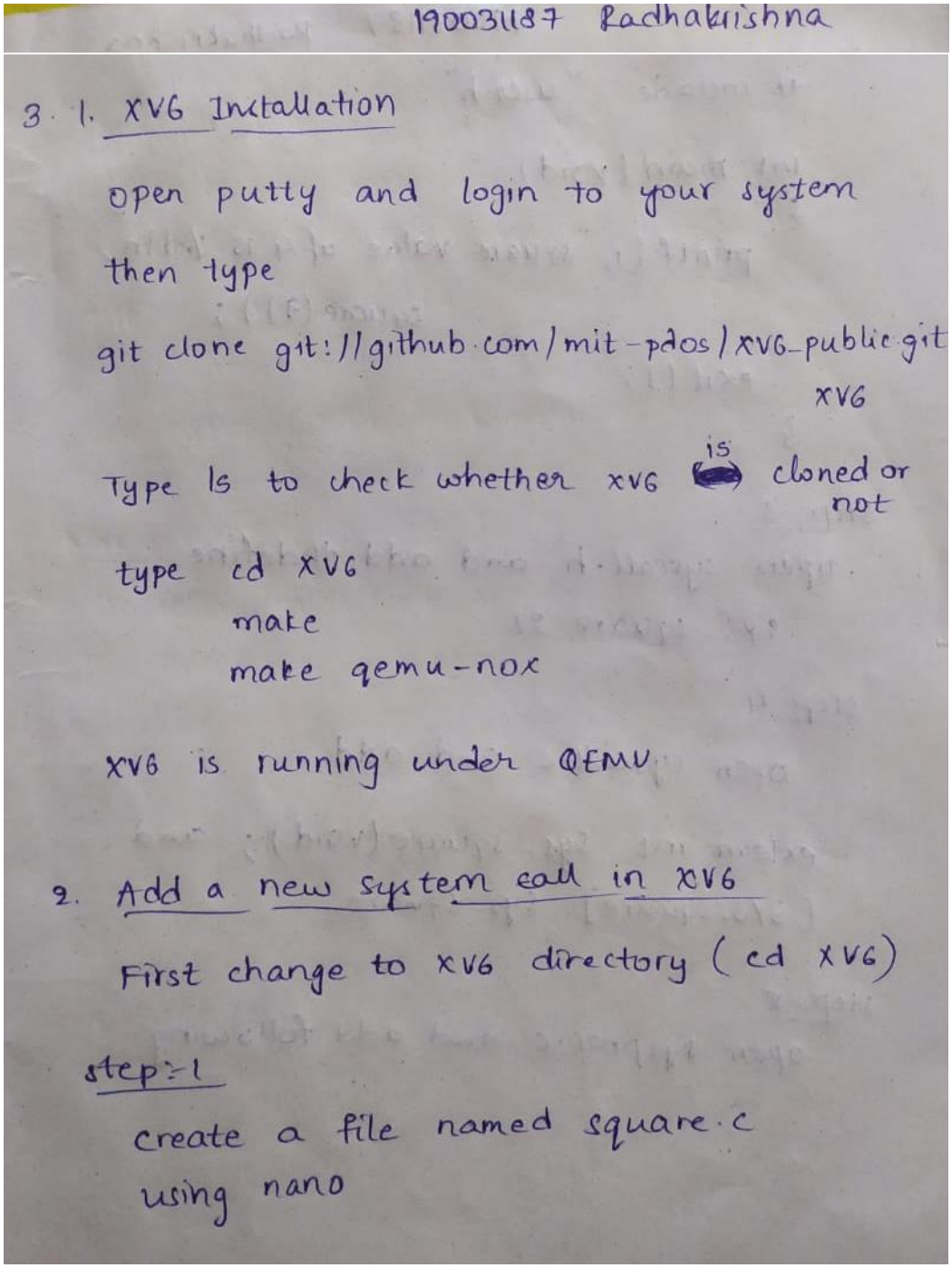
sysproc.c - process related system call implementation

user.h - declaration of system call wrappers & standard library functions

usys.S

assembly code (generated by preprocessor) for system call wrapper.

3) 1. XV6 Installation 2. add-a-newsystem-call-inxv6



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3. 1. XV6 Installation

open putty and login to your system

then type

git clone git://github.com/mit-pdos/xv6-public.git xv6

Type ls to check whether xv6 is cloned or not

type cd xv6
make
make qemu-nox

xv6 is running under QEMU

2. Add a new system call in xv6

First change to xv6 directory (cd xv6)

step:1

create a file named square.c using nano

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step-2

write the program as follows

```
#include "types.h"
#include "math.h"
#include "user.h"

int main(void)
{
  printf(1, "square value of 9 is %d\n",
                    square(9));
  exit();
}
```

step-3

open syscall.h and add #define

SYS_square 22

step-4

open syscall.c and add

extern int sys_square(void); and

[SYS_square] sys_square,

step-5

open sysproc.c and add following

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```
int sys_square (void)
{
    int Num;
    agrptr ( 0, (void *) & Num, sizeof (Num));
    return Num * Num;
}
```

step-6

open user.h and add int square (int);

step-7

open (~~xxxxxx~~) usys.s and add

SYSCALL(square);

step-8

open nano Maketile and add in

UPROGS = \ -square\ and add

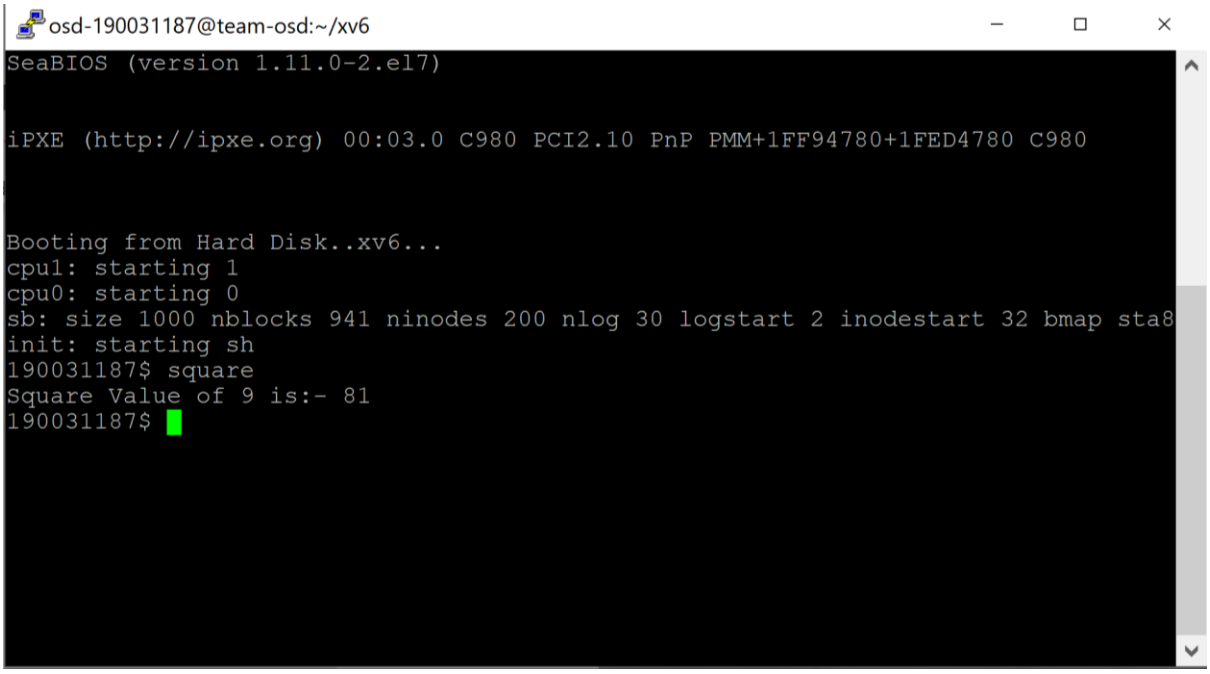
square.c\ in EXTRA = \

step-9

Type make qemu-nox

and square to get output

OUTPUT


osd-190031187@team-osd:~/xv6
SeaBIOS (version 1.11.0-2.el7)
iPXE (http://ipxe.org) 00:03.0 C980 PCI2.10 PnP PMM+1FF94780+1FED4780 C980
Booting from Hard Disk..xv6...
cpu1: starting 1
cpu0: starting 0
sb: size 1000 nblocks 941 ninodes 200 nlog 30 logstart 2 inodestart 32 bmap sta8
init: starting sh
190031187$ square
Square Value of 9 is:- 81
190031187$